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DIETARY STUDIES IN NEW MEXICO IN 1895.

BY

ARTHUR GOSS, M. S.,

PROFESSOR OF CHEMISTRY, NEW MEXICO COLLEGE OF  
AGRICULTURE AND MECHANIC ARTS.



WASHINGTON:

GOVERNMENT PRINTING OFFICE.

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## LETTER OF TRANSMITTAL.

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UNITED STATES DEPARTMENT OF AGRICULTURE,  
OFFICE OF EXPERIMENT STATIONS,  
Washington, D. C., February 8, 1897.

SIR: I have the honor to transmit herewith a report on food and dietary investigations in New Mexico, made by Arthur Goss, M. S., professor of chemistry in the New Mexico College of Agriculture and Mechanic Arts, and chemist of the Agricultural Experiment Station of New Mexico. The work here reported consisted of studies of the dietaries of three typical Mexican families and chemical analyses of sixty-three samples of foods used in these dietaries and also commonly by large numbers of people in the southwestern portions of the United States. These investigations constitute a part of the series of nutrition investigations in charge of this office. They were conducted under the immediate supervision of Prof. W. O. Atwater, special agent in charge of nutrition investigations, in accordance with instructions given by the Director of this Office. The New Mexico College and Station have cordially cooperated with the Department in this work. In the analytical work valuable assistance was rendered by Mr. R. F. Hare, assistant chemist of the New Mexico Experiment Station. Efficient service was also rendered by Mr. Fabian Garcia as interpreter and Mr. A. M. Holt as tabulator, both these gentlemen being graduates of the New Mexico College of Agriculture and Mechanic Arts.

According to the census of 1890, the population of New Mexico was 153,000, of whom by far the greater number were Mexicans or Spanish-speaking people. The Mexican families of the poorer class live in a very primitive manner, and are usually gathered into small groups, who farm the adjacent land. The income outside of their small crops is very meager, consisting chiefly of what they receive for odd jobs of work. Casual observers of their habits are often puzzled to know what they really live on. The studies reported by Professor Goss answer this query and give us accurate data regarding the food materials used in a class of dietaries on which there has heretofore been little information. As these studies were in a new field, it was necessary to make a considerable number of analyses of foods, not only because some of the

materials used for food in this region are different from those used in other portions of the country, but also because by reason of climatic and other conditions the composition of many food stuffs used in New Mexico differs from that of the same classes of materials found in other regions. These dietary studies will be of special interest when studied in comparison with those of people of similar occupations in other parts of the United States.

Professor Goss's report is submitted with the recommendation that it be published as Bulletin No. 40 of this Office.

Respectfully,

A. C. TRUE,  
*Director.*

Hon. J. STERLING MORTON,  
*Secretary of Agriculture.*

# DIETARY STUDIES IN NEW MEXICO.

## THE ENVIRONMENT OF THE PEOPLE AMONG WHOM THE STUDIES WERE MADE.

The Mexican or native population of New Mexico and the Southwest in general may, for convenience, be divided into well-to-do people, those in moderate circumstances, and the very poor. The people who have some considerable property and who live and dress very much as do those in similar circumstances in the East are comparatively few. By far the greater number of Mexicans are poor and live in a very primitive manner. There are, of course, people between these extremes. They are somewhat more numerous than the former, but less numerous than the latter.

One of the families selected for this investigation was in moderate circumstances and lived in the town of Las Cruces. The other two families were poor people and lived on a ranch some 4 miles south of Las Cruces.

The poorer class of Mexicans, who live out of town, are usually in groups of from two or three to twenty or more families. They cultivate the adjacent land, which they sometimes own, but more often rent, paying grain. As the only arable land to speak of in the arid region is along the water courses, the people are found living along the streams.

### MEXICAN HOUSES.

Nearly all the Mexicans and many of the Americans in this region live in thick-walled, flat-roofed houses made of large sun-dried bricks or "adobes."

In the case of the poorer class of Mexicans, one family, often large, usually occupies but a single room of less than 20 by 30 feet. This room has but a single door, and one or possibly two openings in the wall to admit light. These "windows" have no glass, and are guarded by wooden slats set into the wall a few inches apart. The floors of the houses are simply the bare ground, and the roofs are made of poles covered with brush, or some similar material, on top of which is spread a liberal coating of adobe mud. This constitutes the only protection against rain, which, however, seldom falls. The flat-roofed houses, made of earth, present a very peculiar, box-like, and unprepossessing appearance. They are, however, about the most comfortable residence for this country, the thick walls serving to equalize the temperature.

## FOOD USED.

Mexicans of the poorer class raise the greater part of their food, which is almost entirely of vegetable origin. Flour and corn are used, the relative amounts depending upon the amount of money available. If it is necessary to reduce the cost of living to the minimum, as is often the case, more corn and less flour is used.

Probably the next article in amount, and a very important one, is the native bean or "frijole" (*Phaseolus* sp.), which, together with peas and lentils, is used to supply the protein necessary in the absence of meats and other nitrogenous foods of animal origin.

Another universal article in the Mexican diet is red pepper, or "chili," which, while it constitutes comparatively a rather small proportion by weight of the total food, is still consumed in enormous quantities as compared with the use of such material by the people of the Eastern States. Chili is probably used more for its stimulating effect on the digestive organs than for the actual amount of nutrients which it furnishes. It or some similar substance is said to be almost essential in the diet of people living in warm countries, who depend almost entirely upon vegetable matter for their food.

In point of cost probably the most important article used by the Mexicans, not home produced, is coffee. This is used almost universally and in large quantities, and is usually purchased unroasted. In the dietary studies here reported the amount paid for coffee varied from 15 to 19 per cent of the total cost of the food used. Lard is another very important article which is usually purchased, and which is used in considerable quantities. As the vegetable foods used contain very little fat, it is necessary to increase the amount of this substance by addition from outside sources, usually either lard compound or beef tallow, which are the cheapest forms of fat in this region.

## PREPARATION OF FOOD.

In the houses of the poorer class the cooking is done in an open fireplace, usually located in one corner of the room.

The "tortillas," or cakes made of flour or ground corn, are one of the most generally and extensively used foods. When the tortillas are made from corn, the kernels are first boiled with lime, which softens them. The skin is then usually though not always removed, and the grain is ground in a crude stone grinding apparatus or "metate," consisting of a concave slab of stone and a smaller convex piece, which is held in the hands and which serves as a pestle. The grinding is not rotary, however, as in an ordinary mortar, but up and down, toward and from the body. The corn used is usually a small blue kind, rather soft, which seems to contain somewhat more than the average amount of fat. After the corn has been ground into a mush on the metate it is patted out in the hands into the tortillas. Corn tortillas are never rolled, as is the case with those made from flour. If flour is used, it is

mixed into a dough with water and the cake rolled out from it. The flour used is not ground in the metate, but in the ordinary flouring mills. It is usually of poor quality, coarse and dark colored. After being worked into the proper form, the tortilla is baked on a flat piece of iron, supported directly over the fire in the open fireplace, the iron being first greased with lard. As soon as it is done on one side the tortilla is turned by pressing the moistened fingers against the upper side of it, thus causing it to adhere to the fingers, whereupon it is deftly turned and the opposite side is browned.

The frijoles or beans are cooked in small homemade earthenware pots, and are almost invariably combined with a very liberal proportion of chili and also considerable lard.

The chili is cooked alone, and also with various other articles of food. It is prepared by first removing the stems and seeds of the pods, which constitute somewhat more than half of the total weight, after which it is sometimes ground in the metate, but is usually soaked in water and the inner or edible portion separated from the outer skin by squeezing in the hands. Owing to the extremely strong irritating effect on the hands, this operation can not be performed by an amateur. The Mexican women, however, become so accustomed to it that it seems to have no effect on them.

Among the poor families the meals are served on the floor in the middle of the room, the family sitting on the ground around the food and eating without knives, forks, or plates.

#### MISCELLANEOUS.

The houses of the poor people are usually supplied with skins of sheep and other animals, which serve both as chairs and beds for the children. When grinding corn and other articles in the metate and doing other kinds of housework, the women usually sit on the floor on these skins.

A very peculiar feature found in most of these houses is the swallows' nests attached to the ceiling. The swallows continually flitting in and out of the door feeding their young seem to be entirely at home among the dogs and children.

The water supply for a group of families is usually an open well, centrally located, and used by all alike.

In passing from the poor to the well-to-do classes, and from the country to the towns, the manners and customs become more and more Americanized, until finally there is little difference in these respects between Americans and Mexicans. In the families of people in moderate circumstances living in the towns the stove and table make their appearance, and the meals are cooked and served more nearly in the American manner. A greater variety of food is also used, including some meats and other animal foods. The frijoles and chili, however, are never discarded from the Mexican diet, no matter how high the station in life.

## CHARACTER AND SCOPE OF THE STUDIES.

The investigations reported in this bulletin are: (1) Analyses of the food materials in common use in the region of Las Cruces, and (2) three dietary studies in Mexican families of this region—two poor and one in moderate circumstances.

## ANALYSES OF FOODS.

Tables 1 to 3 give the composition of the more common food materials of New Mexico as purchased and of the fresh and air-dry edible portions of the same. They include analyses of nearly all the foods used to any considerable extent in the dietaries reported beyond.

Upon looking over the figures secured in this work, some rather interesting relations become apparent.

It will be noticed, for example, that the samples, as a rule, are low in water. This fact has been noted before in work done here, and is doubtless due to the extremely dry climate of New Mexico.

It will also be seen that, as a rule, the samples of beef analyzed in connection with dietary No. 164 were extremely low in fat. While these samples were hardly typical, being mostly of a somewhat inferior grade and largely in the nature of trimmings, they furnish an indication of the extremely lean condition of the meats, due probably to the fact that the animals pasture where grazing is very scant.

In the case of chili, the ordinary analysis is probably of very little value for the purpose of comparing it with other food materials. For example, this substance shows a considerable percentage of ether extract, which is usually supposed to be composed largely of fat or substances which act in a somewhat similar manner in the system. In the case of chili, however, a large proportion of the extract bears little resemblance to ordinary edible fat, and the noticeable effect on the system is certainly radically different.

The percentage of refuse in the eggs analyzed here was somewhat higher than the average of samples analyzed elsewhere.

TABLE 1.—*Composition of food materials as purchased, including both edible portion and refuse.*

[Analyzed at Mesilla Park, N. Mex.]

Kind of food material.	Reference number. <sup>1</sup>	Refuse.	Water.	Protein.	Fat.	Carbohydrates.	Ash.	Fuel value per pound.
ANIMAL FOOD.								
Beef:		<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Calories.</i>
Steak, round.....	232	6.7	69.2	19.7	2.6	.....	1.8	475
Steak, mixed cuts.....	138	.....	69.2	27.4	1.8	.....	1.6	585
Do.....	139	13.6	67.6	16.9	.8	.....	1.1	350
Do.....	140	.....	64.1	22.3	11.2	.....	2.4	885
Ribs.....	173	18.4	53.6	22.4	4.4	.....	1.2	600
Do.....	174	16.5	57.8	22.8	1.6	.....	1.3	490
Average of ribs.....		17.5	55.7	22.6	3.0	.....	1.2	545
Tallow.....	428	.....	.....	.....	100.0	.....	.....	4,220
Do.....	429	.....	.....	.....	100.0	.....	.....	4,220

<sup>1</sup> The numbers used in an unpublished compilation of analyses of American food materials.



TABLE 1.—Composition of food materials as purchased, etc.—Continued.

[Analyzed at Mesilla Park, N. Mex.]

Kind of food material.	Reference number.	Ref-use.	Water.	Protein.	Fat.	Carbohydrates.	Ash.	Fuel value per pound.
ANIMAL FOOD—continued.								
Pork:		<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Calories.</i>
Hog's head, untrimmed.....	2009	50.0	31.5	2.2	16.1	.....	0.2	720
Lard, homemade.....	4050	.....	.....	.....	100.0	.....	.....	4,220
Lard compound.....	4051	.....	.....	.....	100.0	.....	.....	4,220
Do.....	4052	.....	.....	.....	100.0	.....	.....	4,220
Do.....	4053	.....	.....	.....	100.0	.....	.....	4,220
Do.....	4054	.....	.....	.....	100.0	.....	.....	4,220
Eggs.....	2788	12.6	58.7	15.0	12.3	.....	1.4	800
Do.....	2789	13.4	62.4	12.3	10.8	.....	1.1	685
Do.....	2790	12.0	64.2	12.6	10.0	.....	1.2	655
Average of eggs.....	.....	12.7	61.8	13.3	11.0	.....	1.2	710
VEGETABLE FOOD.								
Corn, native, white, entire grain.....	5051	.....	9.9	9.4	4.8	74.5	1.4	1,765
Corn, native, white, bran not included..	5050	4.0	6.9	9.6	4.5	73.2	1.8	1,730
Corn, native, blue, entire grain.....	5052	.....	6.4	10.7	5.8	75.3	1.8	1,845
Do.....	5053	.....	5.8	10.3	5.8	76.4	1.7	1,860
Average of blue corn.....	.....	.....	6.1	10.5	5.8	75.9	1.7	1,850
Flour, wheat, native.....	5360	.....	10.3	10.1	1.2	77.7	.7	1,685
Do.....	5361	.....	7.8	8.7	.8	82.1	.6	1,725
Do.....	5362	.....	7.1	10.4	1.5	80.3	.7	1,750
Do.....	5363	.....	6.7	10.5	1.6	80.4	.8	1,760
Average of wheat flour.....	.....	.....	8.0	9.9	1.3	80.1	.7	1,730
Rice.....	5105	.....	9.1	8.4	.3	81.9	.3	1,695
Do.....	5106	.....	9.8	8.3	.3	81.2	.4	1,675
Average of rice.....	.....	.....	9.5	8.3	.3	81.6	.3	1,685
Oatmeal, "Scotch rolled white oats"....	5090	.....	6.4	18.4	6.9	66.4	1.9	1,870
Crackers, soda.....	5647	.....	4.9	8.8	9.7	74.4	2.2	1,960
Do.....	5648	.....	3.7	9.4	8.9	75.4	2.6	1,930
Average of soda crackers.....	.....	.....	4.3	9.1	9.3	74.9	2.4	1,955
Macaroni, "Clubhouse" brand.....	5418	.....	7.0	14.6	.3	77.3	.8	1,720
Beans, native, dried, frijoles.....	6516	.....	9.9	24.4	1.0	60.7	4.0	1,625
Do.....	6517	.....	7.0	21.1	1.5	66.0	4.4	1,685
Do.....	6518	.....	6.3	21.3	1.3	66.9	4.2	1,695
Do.....	6519	.....	6.8	20.9	1.4	66.6	4.3	1,685
Average of dried frijoles.....	.....	.....	7.5	21.9	1.3	65.1	4.2	1,675
Beans, lima, dried, imported.....	6524	.....	8.3	24.5	.6	62.4	4.2	1,640
Beans, mesquite, dried.....	6520	.....	4.8	12.2	2.5	77.1	3.4	1,765
Lentils, native, dried.....	6601	.....	6.4	24.5	.7	59.8	8.6	1,595
Do.....	6600	.....	8.2	26.6	.7	59.1	5.4	1,625
Average of dried lentils.....	.....	.....	7.3	25.6	.7	59.4	7.0	1,610
Onions, native.....	6620	2.3	80.6	1.7	.1	14.9	.4	315
Onions, native, green.....	6622	52.4	40.6	.6	.1	6.0	.3	125
Do.....	6623	49.6	44.7	.4	.1	5.0	.2	105
Average of green onions.....	.....	51.0	42.7	.5	.1	5.5	.2	115
Peas, native, dried.....	6638	.....	6.9	28.0	.8	61.0	3.3	1,690
Do.....	6639	.....	7.5	23.8	1.0	63.4	4.3	1,660
Do.....	6640	.....	7.1	24.7	.9	64.3	3.0	1,695
Average of dried peas.....	.....	.....	7.2	25.5	.9	62.9	3.5	1,680
Peas, native, green.....	6656	48.2	37.1	4.1	.3	9.7	.6	270
Do.....	6657	46.2	38.9	4.0	.2	10.2	.5	270
Average of green peas.....	.....	47.2	38.0	4.0	.2	10.0	.6	270
Potatoes, Colorado.....	6748	20.3	61.8	1.6	.1	15.6	.6	325
Do.....	6749	15.6	67.8	1.8	.1	14.0	.7	300
Do.....	6750	13.1	65.2	2.0	.1	18.7	.9	390
Do.....	6751	13.6	66.7	2.0	.1	16.7	.9	350
Average of potatoes.....	.....	15.6	65.4	1.8	.1	16.3	.8	340

TABLE 1.—*Composition of food materials as purchased, etc.—Continued.*

[Analyzed at Mesilla Park, N. Mex.]

Kind of food material.	Reference number.	Ref-use.	Water.	Protein.	Fat.	Carbohy- drates.	Ash.	Fuel value per pound.
VEGETABLE FOOD—continued.								
Radishes, native, small red .....	6873	<i>Per ct.</i> 30.6	<i>Per ct.</i> 65.8	<i>Per ct.</i> 0.6	<i>Per ct.</i> 0.1	<i>Per ct.</i> 2.4	<i>Per ct.</i> 0.5	<i>Calories.</i> 60
Red pepper (chili), native, dried .....	6624	56.7	2.8	4.0	3.1	30.2	3.2	765
Do .....	6625	51.2	1.9	5.4	5.0	32.9	3.6	925
Do .....	6626	59.3	2.0	3.3	3.1	29.3	3.0	735
Do .....	6627	67.1	1.6	3.3	2.1	23.3	2.6	585
Do .....	6628	50.4	3.1	4.2	3.6	34.9	3.8	880
Average of dried chili .....		57.0	2.3	4.0	3.4	30.1	3.2	780
Red pepper (chili), dried while green ..	6629		5.0	15.5	8.5	63.0	8.0	1,820
Tomatoes, native, dried .....	6921		7.3	12.9	8.1	62.3	9.4	1,740
Grape butter, native .....	8126		36.7	1.2	.1	58.5	3.5	1,115
Apples, native, dried .....	8089		8.6	2.5	.1	86.9	1.9	1,670
Strawberries, from Mexico .....	8080	11.2	75.8	1.0	.4	10.9	.7	240
Strawberries, native .....	8981	3.1	84.1	.8	.3	10.8	.9	230
Average of strawberries .....		7.1	80.0	.9	.3	10.9	.8	235

TABLE 2.—*Composition of fresh, edible portion of food materials.*

[Analyzed at Mesilla Park, N. Mex.]

Kind of food material.	Reference number. <sup>1</sup>	Water.	Protein.	Fat.	Carbohy- drates.	Ash.	Fuel value per pound.
ANIMAL FOOD.							
Beef:		<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Calories.</i>
Steak, round .....	232	74.2	21.1	2.8		1.9	510
Steak, mixed cuts .....	138	69.2	27.4	1.8		1.6	585
Do .....	139	78.2	19.6	.9		1.3	405
Do .....	140	64.1	22.3	11.2		2.4	885
Ribs .....	173	65.7	27.4	5.4		1.5	735
Do .....	174	69.2	27.3	1.9		1.6	590
Average of ribs .....		67.5	27.3	3.7		1.5	665
Tallow .....	428			100.0			4,220
Do .....	429			100.0			4,220
Pork:							
Hog's head, untrimmed .....	2009	63.1	4.3	32.3		.3	1,445
Lard, homemade .....	4050			100.0			4,220
Lard, compound .....	4051			100.0			4,220
Do .....	4052			100.0			4,220
Do .....	4053			100.0			4,220
Do .....	4054			100.0			4,220
Eggs .....	2788	67.2	17.2	14.0		1.6	910
Do .....	2789	72.0	14.2	12.5		1.3	790
Do .....	2790	72.9	14.3	11.4		1.4	745
Average of eggs .....		70.7	15.3	12.6		1.4	815
VEGETABLE FOOD.							
Corn, native, white, entire grain .....	5051	9.9	9.4	4.8	74.5	1.4	1,765
Corn, native, white, bran not included ..	5050	7.2	10.0	4.7	76.2	1.9	1,805
Corn, native, blue, entire grain .....	5052	6.4	10.7	5.8	75.3	1.8	1,845
Do .....	5053	5.8	10.3	5.8	76.4	1.7	1,860
Average of blue corn .....		6.1	10.5	5.8	75.9	1.7	1,850
Flour, wheat, native .....	5360	10.3	10.1	1.2	77.7	.7	1,685
Do .....	5361	7.8	8.7	.8	82.1	.6	1,725
Do .....	5362	7.1	10.4	1.5	80.3	.7	1,750
Do .....	5363	6.7	10.5	1.6	80.4	.8	1,760
Average of wheat flour .....		8.0	9.9	1.3	80.1	.7	1,730

<sup>1</sup> The numbers used in an unpublished compilation of analyses of American food materials.



TABLE 2.—Composition of fresh, edible portion of food materials—Continued.

[Analyzed at Mesilla Park, N. Mex.]

Kind of food material.	Reference number.	Water.	Protein.	Fat.	Carbohydrates.	Ash.	Fuel value per pound.
VEGETABLE FOOD—continued.							
Rice.....	5105	<i>Per ct.</i> 9.1	<i>Per ct.</i> 8.4	<i>Per ct.</i> 0.3	<i>Per ct.</i> 81.9	<i>Per ct.</i> 0.3	<i>Calories.</i> 1,695
Do.....	5106	9.8	8.3	.3	81.2	.4	1,675
Average of rice.....		9.5	8.3	.3	81.6	.3	1,685
Oat meal, rolled, "Scotch rolled white oats".....	5090	6.4	18.4	6.9	66.4	1.9	1,870
Crackers, soda.....	5647	4.9	8.8	9.7	74.4	2.2	1,960
Do.....	5648	3.7	9.4	8.9	75.4	2.6	1,950
Average of soda crackers.....		4.3	9.1	9.3	74.9	2.4	1,955
Macaroni, "Clubhouse" brand.....	5418	7.0	14.6	.3	77.3	.8	1,720
Beans, native, dried, frijoles.....	6516	9.9	24.4	1.0	60.7	4.0	1,625
Do.....	6517	7.0	21.1	1.5	66.0	4.4	1,685
Do.....	6518	6.3	21.3	1.3	66.9	4.2	1,695
Do.....	6519	6.8	20.9	1.4	66.6	4.3	1,685
Average of dried frijoles.....		7.5	21.9	1.3	65.1	4.2	1,675
Beans, lima, dried, imported.....	6524	8.3	24.5	.6	62.4	4.2	1,640
Beans, mesquite, dried.....	6520	4.8	12.2	2.5	77.1	3.4	1,765
Lentils, native, dried.....	6601	6.4	24.5	.7	59.8	8.6	1,595
Do.....	6600	8.2	26.6	.7	59.1	5.4	1,625
Average of dried lentils.....		7.3	25.6	.7	59.4	7.0	1,610
Onions, native.....	6220	82.5	1.7	.1	15.3	.4	320
Onions, native, green.....	6622	85.4	1.3	.2	12.4	.7	263
Do.....	6623	88.7	.8	.1	9.9	.5	235
Average of green onions.....		87.1	1.0	.1	11.2	.6	230
Peas, native, dried.....	6678	6.9	28.0	.8	61.0	3.3	1,690
Do.....	6639	7.5	23.8	1.0	63.4	4.3	1,660
Do.....	6640	7.1	24.7	.9	64.3	3.0	1,695
Average of dried peas.....		7.2	25.5	.9	62.9	3.5	1,680
Peas, native, green.....	6656	71.6	8.0	.5	18.8	1.1	520
Do.....	6657	72.4	7.5	.3	18.9	.9	495
Average of green peas.....		72.0	7.8	.4	18.8	1.0	510
Potatoes, Colorado.....	6748	77.5	2.0	.1	19.6	.8	405
Do.....	6749	80.3	2.2	.1	16.6	.8	355
Do.....	6750	75.1	2.3	.1	21.5	1.0	445
Do.....	6751	77.2	2.3	.1	19.4	1.0	410
Average of potatoes.....		77.5	2.2	.1	19.3	.9	405
Radishes, native, small red.....	6873	94.8	.9	.1	3.4	.8	85
Red pepper (chili), native, dried.....	6624	6.4	9.2	7.1	69.8	7.5	1,770
Do.....	6625	3.9	11.1	10.3	67.3	7.4	1,905
Do.....	6626	4.9	8.2	7.5	71.9	7.5	1,805
Do.....	6627	4.9	9.9	6.3	70.9	8.0	1,785
Do.....	6628	6.2	8.6	7.2	70.3	7.7	1,770
Average of dried chili.....		5.3	9.4	7.7	70.0	7.6	1,805
Red pepper (chili) dried while green.....	6629	5.0	15.5	8.5	63.0	8.0	1,820
Tomatoes, native, dried.....	6921	7.3	12.9	8.1	62.3	9.4	1,740
Grape butter, native.....	8126	36.7	1.2	.1	58.5	3.5	1,115
Apples, dried, native.....	8089	8.6	2.5	.1	86.9	1.9	1,670
Strawberries, from Mexico.....	8080	85.4	1.1	.4	12.3	.8	265
Strawberries, native.....	8081	86.8	.8	.3	11.2	.9	235
Average of strawberries.....		86.1	1.0	.3	11.8	.8	250

TABLE 3.—Composition of water-free substance of edible portion of food materials.

[Analyzed at Mesilla Park, N. Mex.]

Kind of food material.	Reference number. <sup>1</sup>	Nitrogen.	Protein.	Fat.	Carbohydrates.	Ash.
ANIMAL FOOD.						
Beef:		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Steak, round.....	232	13.72	82.0	10.7	.....	7.3
Steak, mixed cuts.....	138	14.70	88.9	5.9	.....	5.2
Do.....	139	14.64	89.9	4.1	.....	6.0
Do.....	140	10.66	62.0	31.3	.....	6.7
Ribs.....	173	13.21	79.8	15.8	.....	4.4
Do.....	174	14.51	88.6	6.3	.....	5.1
Average of ribs.....			84.2	11.1	.....	4.7
Tallow.....	428			100.0	.....	
Do.....	429			100.0	.....	
Pork:						
Hog's head, untrimmed.....	2009	2.07	11.7	87.5	.....	.8
Lard, homemade.....	4050			100.0	.....	
Lard, compound.....	4051			100.0	.....	
Do.....	4052			100.0	.....	
Do.....	4053			100.0	.....	
Do.....	4054			100.0	.....	
Eggs.....	2788	7.72	52.6	42.6	.....	4.8
Do.....	2789	7.12	50.7	44.7	.....	4.6
Do.....	2790	7.03	52.8	41.9	.....	5.3
Average of eggs.....			52.0	43.1	.....	4.9
VEGETABLE FOOD.						
Corn, native, white, entire grain.....	5051		10.4	5.3	82.7	1.6
Corn, native, white, bran not included.....	5050		10.8	5.1	82.1	2.0
Corn, native, blue, entire grain.....	5052		11.4	6.2	80.5	1.9
Do.....	5053		10.9	6.2	81.1	1.8
Average of blue corn.....			11.2	6.2	80.8	1.8
Flour, wheat, native.....	5360		11.3	1.3	86.6	.8
Do.....	5361		9.4	.9	89.0	.7
Do.....	5362		11.2	1.6	86.4	.8
Do.....	5363		11.2	1.7	86.2	.9
Average of wheat flour.....			10.8	1.4	87.0	.8
Rice.....	5105		9.3	.3	90.1	.3
Do.....	5106		9.2	.3	90.0	.5
Average of rice.....			9.2	.3	90.1	.4
Oatmeal, rolled, "Scotch rolled white oats".....	5090		19.7	7.4	70.9	2.0
Crackers, soda.....	5647		9.3	10.2	78.2	2.3
Do.....	5648		9.8	9.2	78.3	2.7
Average of soda crackers.....			9.5	9.7	78.3	2.5
Macaroni, "Clubhouse" brand.....	5418		15.7	.3	83.1	.9
Beans, native, dried, frijoles.....	6516		27.1	1.1	67.4	4.4
Do.....	6517		22.7	1.6	71.0	4.7
Do.....	6518		22.7	1.4	71.4	4.5
Do.....	6519		22.4	1.5	71.5	4.6
Average of dried frijoles.....			23.7	1.4	70.3	4.6
Beans, lima, dried, imported.....	6524		26.7	.6	68.1	4.6
Beans, mesquite, dried.....	6520		12.8	2.6	81.0	3.6
Lentils, native, dried.....	6601		26.2	.7	63.9	9.2
Do.....	6606		28.9	.8	64.4	5.9
Average of dried lentils.....			27.5	.8	64.1	7.6
Onions, native.....	6620		9.7	.6	87.4	2.3
Onions, native, green.....	6622		9.0	1.1	85.2	4.7
Do.....	6623		6.9	.9	88.2	4.0
Average of green onions.....			7.9	1.0	86.7	4.4

<sup>1</sup> The numbers used in an unpublished compilation of analyses of American food materials.

TABLE 3.—*Composition of water-free substance of edible portion of food materials—Cont'd.*

[Analyzed at Mesilla Park, N. Mex.]

Kind of food material.	Reference number.	Nitrogen.	Protein.	Fat.	Carbohydrates.	Ash.
VEGETABLE FOOD—continued.						
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Peas, native, dried .....	6638	.....	30.1	0.9	65.5	3.5
Do .....	6639	.....	25.7	1.1	68.5	4.7
Do .....	6640	.....	26.6	1.0	69.2	3.2
Average of dried peas .....			27.5	1.0	67.7	3.8
Peas, native, green .....	6656	.....	28.4	1.7	66.1	3.8
Do .....	6657	.....	27.2	1.0	68.4	3.4
Average of green peas .....			27.8	1.4	67.2	3.6
Potatoes, Colorado .....	6748	.....	8.9	.2	87.2	3.7
Do .....	6749	.....	19.9	.4	84.5	4.2
Do .....	6750	.....	9.2	.3	86.6	3.9
Do .....	6751	.....	10.1	.3	85.2	4.4
Average of potatoes .....			9.8	.3	85.9	4.0
Radishes, small, native, red .....	6873	.....	16.6	1.0	66.2	16.2
Red pepper (chili), native, dried .....	6624	.....	9.8	7.6	74.6	8.0
Do .....	6625	.....	11.6	10.7	70.0	7.7
Do .....	6626	.....	8.6	7.9	75.6	7.9
Do .....	6627	.....	10.4	6.6	74.6	8.4
Do .....	6628	.....	9.2	7.7	74.9	8.2
Average of dried chili .....			9.9	8.1	73.9	8.1
Red pepper (chili), dried while green .....	6629	.....	16.3	9.0	66.3	8.4
Tomatoes, native, dried .....	6921	.....	13.9	8.8	67.2	10.1
Grape butter, native .....	8126	.....	1.9	.1	92.5	5.5
Apples, dried, native .....	8089	.....	2.7	.1	95.1	2.1
Strawberries, from Mexico .....	8080	.....	7.8	2.9	84.1	5.2
Strawberries, native .....	8081	.....	6.1	2.3	84.8	6.8
Average of strawberries .....			6.9	2.6	84.5	6.0

## DIETARY STUDIES WITH MEXICAN FAMILIES.

Two studies are herewith reported (No. 163 and No. 165) of poor families and one (No. 164) of a family in better circumstances. The studies lasted, in each case, for a period of two weeks, during which time the family was visited each day and personal attention given to the inventories of food and the collection of samples and statistics. The samples as collected were taken to the laboratory and prepared for analysis. Tables 4 to 12 show in tabulated form the results of the work. The first three columns in tables 4, 7, and 10 give the percentage of nutrients in the food purchased. The remaining columns show the weight and cost of food consumed and the weights of nutrients contained therein, all weights being given in grams (28.4 grams equal 1 ounce; 453.6 grams, 1 pound). Tables 5, 6, 8, 9, 11, and 12 summarize the results of the studies, giving the food consumed "per man per day," the fuel value of the total food consumed by the respective families, and the equivalent fuel value per man per day.

Analyses of most of the foods used will be found in the preceding tables. In a few cases, however, the average of analyses previously made at the New Mexico Agricultural Experiment Station were used in the calculations. These local averages were used because it was thought that they would probably give results nearer the exact facts than averages of analyses of samples grown and analyzed in other places.

## DIETARY OF A POOR MEXICAN FAMILY NEAR LAS CRUCES, N. MEX. (No. 163).

The study began April 10, 1896, and continued fourteen days.

The members of the family and number of meals taken were as follows:

	Meals.
Man 28 years old.....	41
Woman 22 years old (41 meals $\times$ 0.8 meal of man), equivalent to....	33
Boy 2 years old (41 meals $\times$ 0.3 meal of man), equivalent to.....	12
Visitor .....	2

Total number of meals taken..... 88

Equivalent to one man twenty-nine days.

*Remarks.*—This family is one of a group of ten living on a ranch a few miles from Las Cruces, the head of each family cultivating a small plat of land belonging to the ranch, for which rent is paid in grain. The houses are adobe—that is, made of large sun-dried bricks, the one medium-sized room having a bare earth floor and covered with a flat roof of poles overlaid with earth. This family, however, possessed the luxury of an additional small adobe room. The food was cooked in an open fireplace in one corner and the meals were eaten on the bare floor, the family sitting on the ground. The income of this family was very limited, consisting for the most part of pay for odd jobs done by the head of the family, and amounting to possibly from \$50 to \$100 per year. Both the man and the woman, as usual with Mexicans of the poorer class, had an anæmic appearance and seemed to be poorly nourished.

TABLE 4.—*Food materials and table and kitchen wastes in dietary No. 163.*

Kind of food material.	Composition			Total cost.	Weight used.			
	Protein.	Fat.	Carbohy- drates.		Total food material.	Nutrients.		
						Protein.	Fat.	Carbohy- drates.
ANIMAL FOOD.								
Pork:	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per cent.</i>		<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>
Lard, compound <sup>1</sup> .....		100.0		\$0.17	955		955	
Lard, homemade <sup>1</sup> .....		100.0		.18	660		660	
Total animal food.....				.35	1,615		1,615	
VEGETABLE FOOD.								
Cereals, sugars, etc.:								
Corn, native, white <sup>1</sup> .....	9.6	4.5	73.2	.14	6,590	633	297	4,824
Flour <sup>1</sup> .....	10.1	1.2	77.7	.71	16,150	1,631	194	12,549
Sugar.....			98.0	.14	895			877
Total.....				.99	23,635	2,264	491	18,250
Vegetables:								
Beans, "frijoles" <sup>1</sup> .....	24.4	1.0	60.7	.12	2,230	544	22	1,353
Chili <sup>1</sup> .....	4.0	3.1	30.2	.17	770	31	24	232
Lentils <sup>1</sup> .....	26.6	.7	59.1	.10	915	243	6	541
Potatoes <sup>1</sup> .....	1.6	.1	15.6	.05	1,175	19	1	183
Total.....				.44	5,090	837	53	2,309
Fruits, nuts, etc.:								
Grape butter <sup>1</sup> .....	1.2	.1	58.5	.10	220	3		128
Total vegetable food.....				1.53	28,945	3,104	544	20,687
Total food.....				1.88	30,560	3,104	2,159	20,687
Beverages, condiments, etc.:								
Coffee.....				.45				
Salt.....				.03				
Total.....				.48				
Waste, water-free.....	17.0	17.0	60.1		600	102	102	361

<sup>1</sup> Analyzed in connection with these studies.

TABLE 5.—Weights and percentages of food materials and nutritive ingredients used in dietary No. 163.

Kind of food material.	Food material.	Nutrients.			Food material.	Nutrients.			Cost.
		Pro-tein.	Fat.	Carbo-hy-drates.		Pro-tein.	Fat.	Carbo-hy-drates.	
FOR FAMILY, 14 DAYS.]									
Pork, lard, etc.....	Grams. 1. 615	Grams. 1. 615	Grams. 491	Grams. 18, 250	Lbs. 3. 60	Lbs. 3. 60	Lbs. 1. 10	Lbs. 40. 20	\$0. 35
Cereals, sugars, starches .....	23. 635	2, 264	53	2, 309	52. 10	5. 00	1. 10	40. 20	. 99
Vegetables .....	5. 090	837	53	2, 309	11. 20	1. 80	. 10	5. 10	. 44
Fruits .....	220	3	.....	128	. 50	.....	.....	. 30	. 10
Total vegetable food ....	28. 945	3, 104	544	20, 687	63. 80	6. 80	1. 20	45. 60	1. 53
Condiments, etc .....	.....	.....	.....	.....	.....	.....	.....	.....	. 43
Total food .....	30, 560	3, 104	2, 159	20, 687	67. 40	6. 80	4. 80	45. 60	2. 36
PER MAN PER DAY.									
Pork, lard, etc.....	56	.....	56	.....	. 12	.....	. 12	.....	. 01
Cereals, sugars, starches .....	815	78	17	629	1. 80	. 17	. 04	1. 39	. 03
Vegetables .....	175	29	2	80	. 33	. 07	.....	. 17	. 02
Fruits .....	8	.....	.....	4	. 02	.....	.....	. 01	.....
Total vegetable food ....	998	107	19	713	2. 20	. 24	. 04	1. 57	. 05
Condiments, etc .....	.....	.....	.....	.....	.....	.....	.....	.....	. 02
Total food .....	1, 054	107	75	713	2. 32	. 24	. 16	1. 57	. 08
PERCENTAGES OF TOTAL FOOD.									
Pork, lard, etc.....	Per ct. 5. 3	Per ct. 74. 8	Per ct. 22. 8	Per ct. 88. 2	.....	.....	.....	.....	Per ct. 14. 8
Cereals, sugars, starches.....	77. 3	72. 9	22. 8	88. 2	.....	.....	.....	.....	42. 0
Vegetables .....	16. 7	27. 0	2. 4	11. 2	.....	.....	.....	.....	18. 6
Fruits .....	. 7	. 1	.....	. 6	.....	.....	.....	.....	4. 2
Total vegetable food ....	94. 7	100. 0	25. 2	100. 0	.....	.....	.....	.....	64. 8
Coffee .....	.....	.....	.....	.....	.....	.....	.....	.....	19. 1
Salt.....	.....	.....	.....	.....	.....	.....	.....	.....	1. 3
Total .....	100. 0	100. 0	100. 0	100. 0	.....	.....	.....	.....	100. 0

TABLE 6.—*Nutrients and potential energy in food purchased, rejected, and eaten, in dietary No. 163.*

Kind of food material.	Cost.	Nutrients.			Fuel value.
		Protein.	Fat.	Carbohy- drates.	
FOR FAMILY, 14 DAYS.					
Food purchased:		<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Calories.</i>
Animal.....	\$0.35		1,615		15,020
Vegetable.....	1.53	3,104	544	20,687	102,600
Total.....	1.88	3,104	2,159	20,687	117,620
Waste.....	.04	102	102	361	2,850
Food actually eaten.....	1.84	3,002	2,057	20,326	114,770
PER MAN PER DAY.					
Food purchased:					
Animal.....	.01		56		520
Vegetable.....	.05	107	19	713	3,540
Total.....	.06	107	75	713	4,060
Waste.....		3	4	12	100
Food actually eaten.....	.06	104	71	701	3,960
PERCENTAGES OF TOTAL FOOD PURCHASED.					
Food purchased:	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Animal.....	18.6		74.8		12.8
Vegetable.....	81.4	100.0	25.2	100.0	87.2
Total.....	100.0	100.0	100.0	100.0	100.0
Waste.....	2.2	3.3	4.7	1.7	2.4
Food actually eaten.....	97.8	96.7	95.3	98.3	97.6

## DIETARY OF A MEXICAN FAMILY IN MODERATE CIRCUMSTANCES AT LAS CRUCES, N. MEX. (No. 164).

The study began May 4, 1896, and continued fourteen days.

The members of the family and number of meals taken were as follows:

	Meals.
Man 43 years old .....	40
Woman 40 years old (41 meals $\times$ 0.8 meal of man), equivalent to..	33
Man 24 years old .....	32
Girl 17 years old (28 meals $\times$ 0.8 meal of man), equivalent to .....	22
Girl 7 years old (40 meals $\times$ 0.5 meal of man), equivalent to.....	20
Visitor .....	1

Total number of meals taken..... 148

Equivalent to one man forty-nine days.

*Remarks.*—The income of this family consisted of pay for work done by the two men folks, and for occasional work done by the older girl as house servant, possibly \$200 or \$300 per annum in all. The members of the family looked healthy and well nourished. They were in better circumstances than the last family. They owned their house, which was made of adobe, as is almost always the case with Mexican houses. The house consisted of four medium-sized rooms with earth floor, two on each side of an inner court into which they opened. This is a very common form of Mexican architecture.



TABLE 7.—Food materials and table and kitchen wastes in dietary No. 164.

Kind of food material.	Composition.			Total cost.	Weight used.			
	Protein.	Fat.	Carbohydrates.		Total food material.	Nutrients.		
						Protein.	Fat.	Carbohydrates.
ANIMAL FOOD.								
Beef:	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>		<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>
Steak <sup>1</sup> .....	27.4	1.8	.....	\$0.21	1,065	292	19	.....
Do.....	16.9	.8	.....	.13	640	108	5	.....
Do.....	22.3	11.2	.....	.45	2,275	507	255	.....
Ribs <sup>1</sup> .....	22.4	4.4	.....	.07	685	154	30	.....
Do.....	22.8	1.6	.....	.09	800	182	13	.....
Total.....	.....	.....	.....	.95	5,465	1,243	322	.....
Pork:								
Hog's head <sup>1</sup> .....	2.2	16.1	.....	.25	4,515	99	727	.....
Lard, compound <sup>1</sup> .....	.....	100.1	.....	.34	1,845	.....	1,845	.....
Total.....	.....	.....	.....	.59	6,360	99	2,572	.....
Eggs <sup>1</sup> .....	15.0	12.2	.....	.06	190	29	23	.....
Do.....	12.3	10.8	.....	.05	150	18	16	.....
Do.....	13.3	11.0	.....	.10	300	40	32	.....
Total animal food.....	.....	.....	.....	1.75	12,465	1,429	2,965	.....
VEGETABLE FOOD.								
Cereals, sugar, etc.:								
Rice <sup>1</sup> .....	8.3	.3	81.2	.17	950	79	3	771
Flour <sup>1</sup> .....	8.7	.8	82.1	.90	20,515	1,785	164	16,844
Do.....	9.9	1.3	80.1	.23	5,330	528	69	4,269
Sugar.....	.....	.....	98.0	.24	1,580	.....	.....	1,548
Total.....	.....	.....	.....	1.54	28,375	2,392	236	23,432
Vegetables:								
Beans, frijoles <sup>1</sup> .....	21.3	1.3	66.9	.24	4,205	896	54	2,813
Chili <sup>1</sup> .....	3.3	2.1	23.3	.30	1,370	45	29	319
Chili, green, dried <sup>1</sup> .....	15.5	8.5	63.0	.02	55	8	5	34
Onions, green <sup>1</sup> .....	.6	.1	6.0	.08	765	5	1	46
Potatoes <sup>1</sup> .....	1.9	.1	14.0	.20	4,645	88	5	650
Do.....	1.9	.1	16.3	.10	2,300	44	2	375
Tomatoes, dried <sup>1</sup> .....	12.9	8.1	62.3	.02	170	22	14	105
Total.....	.....	.....	.....	.96	13,510	1,108	110	4,342
Fruits, nuts, etc.:								
Apples, dried <sup>1</sup> .....	2.5	.1	86.9	.06	280	7	.....	244
Total vegetable food.....	.....	.....	.....	2.56	42,165	3,507	346	28,018
Total food.....	.....	.....	.....	4.31	54,630	4,936	3,311	28,018
Beverages, condiments, etc.:								
Coffee.....	.....	.....	.....	.95	1,710	.....	.....	.....
Pepper, black.....	.....	.....	.....	.01	10	.....	.....	.....
Salt.....	.....	.....	.....	.02	975	.....	.....	.....
Total.....	.....	.....	.....	.98	2,695	.....	.....	.....
Table and kitchen waste.....	17.8	12.3	62.3	.....	865	154	106	539

<sup>1</sup> Analyzed in connection with these studies.

TABLE 8.—Weights and percentages of food materials and nutritive ingredients used in dietary No. 164.

Kind of food material.	Food material.	Nutrients.			Food material.	Nutrients.			Cost.
		Protein.	Fat.	Carbohy- drates.		Protein.	Fat.	Carbohy- drates.	
FOR FAMILY, 14 DAYS.									
	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	
Beef, veal, and mutton .....	5,465	1,243	322	.....	12.10	2.80	.70	.....	\$0.95
Pork, lard, etc.....	6,360	99	2,572	.....	14.00	.20	5.70	.....	.59
Eggs .....	640	87	71	.....	1.40	.20	.10	.....	.21
Total animal food.....	12,465	1,429	2,965	.....	27.50	3.20	6.50	.....	1.75
Cereals, sugars, starches.....	28,375	2,392	236	23,432	62.50	5.30	.50	51.60	1.54
Vegetables .....	13,510	1,108	110	4,342	29.80	2.40	.30	9.60	.96
Fruits .....	280	7	.....	244	.60	.....	.....	.50	.06
Total vegetable food....	42,165	3,507	346	28,018	92.90	7.70	.80	61.70	2.56
Condiments, etc.....	.....	.....	.....	.....	.....	.....	.....	.....	.98
Total food .....	54,630	4,936	3,311	28,018	120.40	10.90	7.30	61.70	5.29
PER MAN PER DAY.									
Beef, veal, and mutton .....	111	25	7	.....	.25	.06	.01	.....	.02
Pork, lard, etc.....	130	2	53	.....	.28	.....	.12	.....	.01
Eggs .....	13	2	1	.....	.03	.....	.....	.....	.01
Total animal food.....	254	29	61	.....	.56	.06	.13	.....	.04
Cereals, sugars, starches.....	579	49	5	478	1.28	.11	.01	1.06	.03
Vegetables .....	276	23	2	89	.61	.05	.01	.19	.02
Fruits .....	6	.....	.....	5	.01	.....	.....	.01	.....
Total vegetable food....	861	72	7	572	1.90	.16	.02	1.26	.05
Condiments, etc.....	.....	.....	.....	.....	.....	.....	.....	.....	.02
Total food .....	1,115	101	68	572	2.46	.22	.15	1.26	.11
PERCENTAGES OF TOTAL FOOD.									
	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>					<i>Per ct.</i>
Beef, veal, and mutton .....	10.0	25.2	9.7	.....	.....	.....	.....	.....	18.0
Pork, lard, etc.....	11.6	2.0	77.7	.....	.....	.....	.....	.....	11.1
Eggs .....	1.2	1.8	2.1	.....	.....	.....	.....	.....	4.0
Total animal food.....	22.8	29.0	89.5	.....	.....	.....	.....	.....	33.1
Cereals, sugars, starches.....	52.0	48.5	7.1	83.6	.....	.....	.....	.....	29.1
Vegetables .....	24.7	22.4	3.4	15.5	.....	.....	.....	.....	18.2
Fruits .....	.5	.1	.....	.9	.....	.....	.....	.....	1.1
Total vegetable food....	77.2	71.0	10.5	100.0	.....	.....	.....	.....	48.4
Coffee.....	.....	.....	.....	.....	.....	.....	.....	.....	18.0
Salt and pepper.....	.....	.....	.....	.....	.....	.....	.....	.....	.5
Total .....	100.0	100.0	100.0	100.0	.....	.....	.....	.....	100.0



TABLE 9.—*Nutrients and potential energy in food purchased, rejected, and eaten in dietary No. 164.*

Kind of food material.	Cost.	Nutrients.			Fuel value.
		Protein.	Fat.	Carbohy- drates.	
FOR FAMILY, 14 DAYS.					
Food purchased:		Grams.	Grams.	Grams.	Calories.
Animal.....	\$1.75	1,429	2,965	.....	33,435
Vegetable.....	2.56	3,507	346	23,018	132,470
Total.....	4.31	4,936	3,311	23,018	165,905
Waste.....	.09	154	106	539	3,825
Food actually eaten .....	4.22	4,782	3,205	27,479	162,080
PER MAN PER DAY.					
Food purchased:					
Animal.....	.04	29	60	.....	680
Vegetable.....	.05	72	7	572	2,705
Total.....	.09	101	67	572	3,385
Waste.....		3	2	11	80
Food actually eaten .....	.09	98	65	561	3,305
PERCENTAGES OF TOTAL FOOD PURCHASED.					
Food purchased:	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Animal.....	40.6	29.0	89.5	.....	20.2
Vegetable.....	59.4	71.0	10.5	100.0	79.8
Total.....	100.0	100.0	100.0	100.0	100.0
Waste.....	2.1	3.1	3.2	1.9	2.3
Food actually eaten .....	97.9	96.9	96.8	98.1	97.7

## DIETARY OF A VERY POOR MEXICAN FAMILY, LAS CRUCES, N. MEX. (No. 165).

The study began May 26, 1896, and continued fourteen days.

The members of the family and number of meals taken were as follows:

	Meals.
Man 40 years old.....	42
Woman 33 years old (42 meals $\times$ 0.8 meal of man) equivalent to....	34
Boy 17 years old .....	40
Boy 5 years old (42 meals $\times$ 0.4 meal of man) equivalent to.....	17
Girl 4 years old (42 meals $\times$ 0.4 meal of man) equivalent to.....	17
Boy 1 year old (42 meals $\times$ 0.3 meal of man) equivalent to.....	12
Visitor, man .....	2
Visitor, girl 10 years old.....	1
Total number of meals taken.....	165

Equivalent to one man fifty-five days.

*Remarks.*—The income of this family was very limited, consisting chiefly of pay for odd jobs done by the head of the family, possibly \$100 to \$150 per annum. The remarks under dietary No. 163 apply equally well to this family.

TABLE 10.—*Food materials and table and kitchen wastes in dietary No. 165.*

Kind of food material.	Composition.			Total cost.	Weight used.			
	Pro-tein.	Fat.	Carbohy- drates.		Total food mate- rial.	Nutrients.		
						Pro-tein.	Fat.	Carbohy- drates.
ANIMAL FOOD.	<i>Per ct.</i>	<i>Per ct.</i>	<i>Per ct.</i>		<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>
Lard, compound <sup>1</sup> .....		100.6		\$0.36	1,940		1,940	
Beef tallow <sup>1</sup> .....		100.0		.15	1,390		1,390	
Eggs <sup>1</sup> .....	12.6	10.0		.05	140	18	14	
Total animal food.....				.56	3,470	18	3,344	
VEGETABLE FOOD.								
Cereals, sugar, etc.:								
Corn, native, blue <sup>1</sup> .....	10.7	5.8	75.3	.16	7,295	781	423	5,493
Do.....	10.3	5.8	76.4	.05	2,400	247	139	1,834
Flour, native <sup>1</sup> .....	10.4	1.5	80.3	.76	17,160	1,785	257	13,779
Do.....	10.5	1.6	80.4	.29	6,695	703	107	5,383
Sugar.....			98.0	.47	3,105			3,044
Candy, stick.....			98.0	.14	250			245
Total .....				1.87	36,905	3,516	926	29,778
Vegetables:								
Beans, frijoles <sup>1</sup> .....	20.9	1.4	66.6	.24	4,290	897	60	2,857
Chili .....	4.3	3.6	34.9	.25	1,150	49	41	401
Onions <sup>1</sup> .....	1.7	.1	14.9	.03	315	5		47
Peas <sup>1</sup> .....	24.7	.9	64.3	.24	2,265	559	20	1,456
Potatoes <sup>1</sup> .....	2.0	.1	18.7	.08	1,870	37	2	350
Do.....	2.0	.1	16.8	.14	3,085	62	3	518
Total .....				.98	12,975	1,609	126	5,629
Total vegetable food.....				2.85	49,880	5,125	1,052	35,407
Total food .....				3.41	53,350	5,143	4,396	35,407
Condiments, beverages, etc.:								
Coffee.....				.62	1,125			
Tea.....				.07	40			
Salt.....				.02	820			
Total .....				.71	1,985			
Waste <sup>1</sup> .....	16.8	11.2	67.8		1,505	253	168	1,020

<sup>1</sup> Analyzed in connection with these studies.TABLE 11.—*Weights and percentages of food materials and nutritive ingredients used in dietary No. 165.*

Kind of food material.	Nutrients.				Nutrients.				Cost.
	Food material.	Protein.	Fat.	Carbohy- drates.	Food material.	Protein.	Fat.	Carbohy- drates.	
FOR FAMILY, 14 DAYS.									
	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	<i>Lbs.</i>	
Pork, lard, etc .....	3,330		3,330		7.30		7.30		\$0.51
Eggs .....	140	18	14		.30		.10		.05
Total animal food.....	3,470	18	3,344		7.60		7.40		.56
Cereals, sugars, starches .....	36,905	3,516	926	29,778	81.40	7.80	2.00	65.70	1.87
Vegetables .....	12,975	1,609	126	5,629	28.60	3.50	.30	12.40	.98
Total vegetable food ....	49,880	5,125	1,052	35,407	110.00	11.30	2.30	78.10	2.85
Condiments, etc.....									.71
Total food .....	53,350	5,143	4,396	35,407	117.60	11.30	9.70	78.10	3.41

TABLE 11.—*Weights and percentages of food materials, etc.—Continued.*

Kind of food material.	Food material.	Nutrients.			Food material.	Nutrients.			Cost.
		Protein.	Fat.	Carbohy- drates.		Protein.	Fat.]	Carbohy- drates.	
PER MAN PER DAY.									
Pork, lard, etc.....	Grams. 60	Grams. 61	Grams. 61	Grams. 542	Lbs. 0.13	Lbs. 0.13	Lbs. 0.13	Lbs. 1.19	\$0.01
Eggs .....	3			102	.01			.23	
Total animal food.....	63		61	644	.14		.13	1.42	.01
Cereals, sugars, starches.....	671	64	17	542	1.48	0.14	.04	1.19	.03
Vegetables .....	236	29	2	102	.52	.07		.23	.02
Total vegetable food....	907	93	19	644	2.00	.21	.04	1.42	.05
Condiments, etc. ....									.01
Total food .....	970	93	80	644	2.14	.21	.17	1.42	.06
PERCENTAGES OF TOTAL FOOD.									
Pork, lard, etc.....	Per ct. 6.2	Per ct. 75.8	Per ct. 75.8	Per ct. 84.1					Per ct. 12.4
Eggs .....	.3	.3	.3	15.9					1.2
Total animal food.....	6.5	.3	76.1	100.0					13.6
Cereals, sugars, starches.....	69.2	68.4	21.1	84.1					45.4
Vegetables .....	24.3	31.3	2.8	15.9					23.8
Total vegetable food....	93.5	99.7	23.9	100.0					69.2
Coffee.....									15.0
Tea and salt .....									2.2
Total .....	100.0	100.0	100.0	100.0					100.0

TABLE 12.—*Nutrients and potential energy in food purchased, rejected, and eaten in dietary No. 165.*

Kind of food material.	Cost.	Nutrients.			Fuel value.
		Protein.	Fat.	Carbohy- drates.	
FOR FAMILY, 14 DAYS.					
Food purchased:		<i>Grams.</i>	<i>Grams.</i>	<i>Grams.</i>	<i>Calories.</i>
Animal .....	\$0. 56	18	3, 344	.....	31, 170
Vegetable .....	2. 85	5, 125	1, 052	35, 407	175, 970
Total .....	3. 41	5, 143	4, 396	35, 407	207, 140
Waste .....	. 11	253	168	1, 020	6, 780
Food actually eaten .....	3. 30	4, 890	4, 228	34, 387	200, 360
PER MAN PER DAY.					
Food purchased:					
Animal .....	. 01	.....	61	.....	565
Vegetable .....	. 05	93	19	644	3, 200
Total .....	. 06	93	80	644	3, 765
Waste .....	.....	4	3	19	120
Food actually eaten .....	. 06	89	77	625	3, 645
PERCENTAGES OF TOTAL FOOD PURCHASED.					
Food purchased	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Animal .....	16. 4	0. 3	76. 1	.....	15. 0
Vegetable .....	83. 6	99. 7	23. 9	100. 0	85. 0
Total .....	100. 0	100. 0	100. 0	100. 0	100. 0
Waste .....	3. 2	4. 9	3. 8	2. 9	3. 3
Food actually eaten .....	96. 8	95. 1	96. 2	97. 1	96. 7

## DISCUSSION OF RESULTS.

In looking over the figures for the dietaries, it will be seen that in all three cases the amount of protein per man per day is rather less than the average of other American dietaries except in the case of the negroes. This is more clearly set forth in Table 13, where the summaries of these dietaries are compared with dietary studies made in other sections and among other classes of people in the United States.

TABLE 13.—*Comparison of studies here reported with others in the United States.*

[Per man per day.]

	Cost—		Nutrients.			Fuel value.	Nutritive ratio.
	Of food.	Of beverages, etc.	Protein.	Fat.	Carbohydrates.		
	Cents.	Cents.	Grams.	Grams.	Grams.	Calories.	
Dietary No. 163.....	6	2	104	71	701	3,960	1:8.3
Dietary No. 164.....	9	2	98	65	561	2,305	1:7.3
Dietary No. 165.....	6	1	89	77	625	3,645	1:9.0
Average .....	7	2	97	71	629	3,635	1:8.2
Dietaries of negroes:							
Dietary with minimum fuel value..	24		31	27	304	1,625	1:11.8
Dietary with maximum fuel value..	124		93	283	649	5,670	1:13.9
Average of 20 dietaries .....	8		62	132	436	3,270	1:11.8
Dietaries of the poor of New York City:							
Dietary with minimum fuel value..	9		57	41	237	1,585	1:5.8
Dietary with maximum fuel value..	22		136	135	595	4,250	1:6.6
Average of 19 dietaries .....	20		106	117	367	3,030	1:6.0
Mechanics' families, average of 9 studies .....			105	152	420	3,570	1:7.3
Farmers' families, average of 5 studies ..			92	114	483	3,420	1:8.1
Professional men's families, average of 9 studies .....			104	122	428	3,315	1:6.8
College students' clubs, average of 15 studies .....			108	148	460	3,700	1:7.4
Proposed standards:							
American .....			125	125	450	3,520	1:5.9
German .....			118	50	500	3,060	1:5.1

As will be noted, the fat in each of the Mexican dietaries is very much less than the average in any of the other classes. The carbohydrates, on the other hand, are decidedly above the average in each case, being, in fact, in dietary No. 163 in excess of the maximum. The average calories per man per day are fully up to the average of other American dietaries.

It seems that in order to secure enough protein and fat in their vegetable rations these people are eating considerably more of carbohydrates than is necessary. It would seem to be better for them to eat more frijoles and lard and less flour and other carbohydrate foods, for their rations are not well balanced, the nutritive ratio being rather wide.

A well-balanced ration would probably have a nutritive ratio of 1:5 or 1:6. The average of the above Mexican dietaries is 1:8. In other words, there is too much of carbohydrates and fats in proportion to the amount of protein consumed.

It will be noticed that in dietary No. 164, where the family used meat to some extent, the nutritive ratio is somewhat narrower. The fact that this family lived in town, and that the men were not doing so much hard work as those in the other dietaries, may also have had something to do with the reduced number of calories.

Very little food was wasted in these dietaries. The maximum was but little more than 3 per cent. Many of our American families could study this point to advantage.

As to cost, it would seem that when people can, and do continually, live as they do here where provisions as a rule are expensive, on less than 7 cents per man per day for actual nutrients, and on less than 10 cents per day when coffee and other articles not absolutely necessary are included, no one need starve in this country at present. If the families studied had used more corn and less flour, as is often done in families of the poorer class, the cost would have been still less.

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